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METHOD OF PROVIDING PHOTOFINISHING SERVICES

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METHOD OF PROVIDING PHOTOFINISHING SERVICES

FIELD OF THE INVENTION

The present invention relates to a method of providing photofinishing services, and more particularly to a method of providing photofinishing services for users of digital cameras.

BACKGROUND OF THE INVENTION

Photographic film has a long history of providing a means of capturing images. The light sensitive nature of photographic film has provided consumers with a good means of image capture at a reasonable cost. The nature of image capture on film is inherently one time use. The exposed film must be chemically processed to provide images to the consumer, and the film loses its light capturing ability in the processing step.

One time use cameras (OTUCs) are a popular means of enjoying photography. Single use cameras provide ready availability and good image reproduction at a low cost for a photographic system. Film-based OTUC systems have been available for many years, and have provided consumers with an easy way to capture images and receive prints.

Digital cameras use electronic sensors to capture images. The signals captured are digitized and stored as digital data, usually in removable non-volatile memory cards. Due to the cost of the memory cards and reusable capacity, they are not typically used for long term storage. Usually data from the memory card is saved to another data storage means such as a PC hard drive or a CD. At any time, the memory card can be cleared of stored data and reused for additional image capture. This is a primary advantage of digital capture. The disadvantage of digital capture is that if prints are desired, the mechanisms for printing are tedious and confusing for the average consumer. In addition, many of the home printing solutions lack the image permanence consumers have grown accustomed to from photographic printing technology.

Local printing at a home PC is fraught with difficulties since a many step process is usually necessary. Additionally, the process is time consuming and can be expensive when the cost of materials is considered. Online printing presents another set of difficulties. Image uploads are often time consuming and confusing. In addition, the volatile nature of the on-line image storage industry has left many consumers with no access to their on-line image account when the company has ceased operations.

Images from memory cards can be printed at retail establishments. This is not often preferred because of the time necessary to download images from the card, and also for the selection process of choosing the images that are desired for printing and choosing from a variety of print formats and image products. In addition, if a photo kiosk such as the "Kodak Picture Maker" is used, queuing and the lack of privacy may present obstacles to the user. The card can be dropped off at a retail establishment for later printing, but the cost of the card is high enough that most consumers are reluctant to purchase a second card to use while the other one is at the printer, or to risk losing the card at the printer.

Recently, fully digital one time use cameras (DOTUCs) have appeared on the market; see for example EP 1212910A1, Hirata et al., published June 12, 2002, and WO 03/024083A2, Braunstein, et al., published March 20, 2003. These are DOTUCs that provide the one time use benefits previously provided by film systems. These systems capture images with an electronic sensor and store the digital image files in digital memory. Because of the high value of the camera and memory, these systems force the consumer to return the camera to the retailer before the images can be accessed. Often the images are in encrypted form and are completely inaccessible to the consumer until the camera is returned. In addition no means is provided to review the images with the camera since, unlike most digital cameras, no image display is provided. Furthermore, the DOTUCs are designed to take a fixed number of images, such as 25, and no contingency is provided to add more memory, such as by adding a new memory card, or extracting the digital image files from the camera by anyone other than the retailer.

What is needed is a system that allows for the ease of use and ready availability of the film system for obtaining prints while maintaining the flexibility of the digital system for viewing and sharing images.

SUMMARY OF THE INVENTION

The need is met by providing a method of supplying photofinishing services that includes the steps of supplying a memory device for a digital camera to a photographer; the photographer taking and storing a plurality of digital images on the memory device; the photographer delivering the memory device containing the digital images to a photofinisher; the photofinisher producing prints of the digital images and returning the prints to the photographer; and the photofinisher erasing the digital images from the memory device and supplying the memory device to another photographer to repeat the steps of taking images and delivering the memory device to the photofinisher.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a flow chart describing a method of delivering photofinishing services according to the present invention;

Fig. 2 is schematic diagram of a memory device useful with the present invention;

Fig. 3 is a schematic diagram of a prepaid debit card useful with the present invention;

Fig. 4 is an index print useful with the present invention;

Fig. 5 is a CD useful with the present invention;

Fig. 6 is a view of the back of a photographic print having an image identifier useful with the present invention;

Fig. 7 is a schematic diagram of a memory device and a claim card useful with the present invention;

Fig. 8 is a schematic diagram of a memory device having a tear off claim check useful with the present invention;

Fig. 9 is a schematic diagram of a memory device having an area for writing a phone number useful with the present invention; and

Fig. 10 shows a digital camera displaying a prerecorded image from the memory device.

DETAILED DESCRIPTION OF THE INVENTION

Referring to Fig. 1, the present invention is directed to a system for recycling reusable memory devices such as magnetic, optical, and solid state memory such as an EEPROM for digital cameras. The following description describes the use of a memory card containing a solid state memory, however any reusable memory device can be employed. The one time use memory card is sold with a commitment to create prints from the images that are captured and stored on the memory card. The one time use memory card may be of several different well-known formats such as CF, MMC, SD, xD, Memory Stick. In step **10**, the user buys the one time use memory card that is appropriate for his camera. This one time use memory card is inserted in the removable memory card slot in the user's camera. In step **12**, pictures are taken and stored on the one time use memory card in the usual fashion. When the user is done capturing images, the user returns the card to a retail photofinishing counter in step **14**.

The card is placed in a photofinishing envelope with the user's name and other pertinent information and the envelope is picked up and delivered to a photofinisher in step **16**. Alternately, the photofinisher may be at the same location as the retail photofinishing counter. The photofinisher reads the image files from the one time use card and prints images from these files in step **18**. In a preferred embodiment, the photofinisher also creates a CD of the image files. It is understood that other imaging services such as creating a CD may be included when this example mentions creation of prints. In step **20**, the prints and CD are placed in the envelope and shipped back to the retailer. The user picks up the prints and CD at the photofinishing counter in step **22**.

Alternatively the user may insert the one time use memory card into an image kiosk such as the Kodak Picture Maker, which produces prints and

CDs from prints and from one time use memory cards. The retailer may also choose to provide "while you wait" printing using a digital minilab or any other suitable printer such as a thermal dye transfer printer and CD or DVD writer.

The one time use memory card is retained by the photofinisher and recycled for resale. The recycling operation includes step **24**, erasure of the memory card so that image data from the user will not be available to the next user buying the memory card or recoverable by more sophisticated means. The recycling operation may also include a verification of the useful capacity of the one time use memory card by writing a test pattern to the one time use memory card and then reading it back. The writing of the test pattern may also erase the card. The one time use memory card is cleared of image files before resale. The memory card may also be inspected for any visual or cosmetic defects and sanitized to prevent the spread of contact transmitted germs. The photofinisher may also include in the memory a record of how many times the memory card has been recycled. The memory card is then repackaged and provided for resale in step **26**. The memory card is returned to the retailer to be repurchased in step **10**.

Referring to Fig. 10, an image can also be prerecorded on the one time use memory card that can be viewed by the customer on a camera display **100** when the card is placed in a camera **102**. The pre-recorded image can be, for example, instructions **104** to the customer for using the photofinishing services of the present invention. Alternatively, the message can be paid advertising **106**.

The commitment to create prints can take many forms. The graphics **42** on the one time use memory card may indicate that the one time use memory card carries with it a commitment to create prints as shown in Fig. 2. When one time use memory card **40** is received at the retail photofinishing counter, graphics **42** indicate that prints will be created. Thus the user need only fill out a photofinishing bag and include the one time use memory card **40** since graphics **42** will alert the photofinisher that prints are to be created.

As shown in Fig. 3, another manner of communicating the commitment to create prints is to include debit card **44** with memory card **40** at the time of sale. In this example, the images on memory card **40** will only be

printed without additional cost if debit card **44** is produced at the retail counter when the user returns the one time use memory card **40**.

A code **46** on the one time use memory card **40** may also indicate to the photofinisher that memory card **40** carries with it the commitment to create prints. Additionally, code **46** can take the form of an ID or similar number or file that resides on the card. The photofinisher may query the one time use memory card **40** to determine if memory card **40** carries with it the commitment to create prints. If the code corresponds to a valid code saved in a database at the photofinisher, then the photofinisher will create the prints. The code is placed on the card before the time of first sale and then again during the recycling operation. This code may be hidden from the user by residing in a pseudo bad sector of the card. That is to say that the controller of the card will not allow the user to access the portion of the card where the ID or file resides. This information may also be stored as a "hidden file". In addition, this code may be stored as a machine and or eye readable unique ID number, alphanumeric sequence, or encrypted code printed on an external surface of the memory card.

When the user captures images, he may capture more or less than a pre-defined number for which prints are promised. In the case where the user captures more than the pre-defined number, only the pre-defined number is printed. For the purpose of this example, the pre-defined number of prints is 15. If 20 image files reside on the one time use memory card, only the most recent 15 will be printed. Alternatively, the 15 first images will be printed. In both cases, when the images are printed, if a CD is created, the CD may contain all the images that are on the one time use memory card. Thus no image files are lost, and the user maintains the ability to print the additional images by accessing the image files on the CD.

An index print **50** can be included with the order and the extra images may be included on index print **50**. Index print **50** could include graphic or textual information **52** indicating which images had been printed or which images had not been printed. Index print **50** includes instructions on how prints or other imaging services may be obtained for the additional images (not shown).

These instructions will include access code **54** and website **56** or phone number **58** that allows the user to order additional prints.

In the case where one time use memory card **40** is returned with less than the predefined number of image files, a credit for the additional images can be returned with the prints. This credit can take the form of a coupon good for a reduction in price of the next purchase of a one time use memory card. The credit could be applied to a second debit card such similar to debit card **44**, but this second debit card is included in the return envelope with the prints instead of being included with the purchase of the one time use memory card **40**.

The invention allows the user to capture and delete images as usual with any memory card. The user can download images from the card and share via email as usual. Preferably, the usage of the card and the images is not restricted. The images are not encrypted in any fashion to restrict usage. The images on the card need not be captured by the user, but can also be from other sources such as shared image files from the cameras of friends.

The prints returned to the user may have an indication of the source file. For example, CD **60** with identifier **62** shown in Fig. 5 is returned along with the prints created from image files on memory card **40**. As shown in Fig. 6, each print **64** may have identifier **66** printed on the back that indicates which CD **60** contains the image file corresponding to the print, and which file on CD **60** corresponds to the print. Thus determining the image file for reprinting and sharing is facilitated.

Additional features can be included with the card when it is sold to improve ease of use. As shown in Fig. 7, a claim card **70** may be included with the one time use memory card **40**. The claim card has ID **72** that is human or machine readable. Memory card **40** also contains the same ID, either as graphic **74** or in memory. When memory card **40** is returned to the photofinisher, the user need not fill out any information on the photofinishing bag if he has retained claim card **70**. Memory card **40** is placed in the bag and the photofinisher creates the prints as usual. After the prints are returned, the user need only present claim card

70 to pick up his prints. If the user loses the claim card, then he must fill out the photofinishing bag.

As shown in Fig. 8, this same effect may be obtained if memory card **40** has tear-off or otherwise removable label **80**. Label **80** can be removed from the card and kept in the possession of the user. After the prints are returned, the user need only present the label to pick up his prints. This technique may also be used as prepayment verification means such, as a coupon redeemable for prints.

Another means of minimizing the amount of data necessary for insuring that the prints are returned to the proper user is to require a phone number **90** of the user on the photofinishing envelope (not shown) or memory card **40**, as shown in Fig. 9. Unique phone number **90** including area code can be used to track the photofinishing order, and can also be used to alert the user that his prints are available for pickup. The user's email address will also serve this purpose. These unique IDs can also be written on card **40**. Phone number **90** can also be used by the manufacturer and retailer to obtain demographic information about customers.

The invention has been described in detail with particular reference to certain preferred embodiments thereof, but it will be understood that variations and modifications can be effected within the spirit and scope of the invention.

PARTS LIST

10	supply memory card step
12	take pictures and store on memory card step
14	deliver memory card to retailer step
16	deliver memory card to photofinisher step
18	produce prints step
20	return prints to retailer step
22	photographer picks up prints step
24	photofinisher erases images from memory card step
26	repackage memory card for resale step
40	one time use memory card
42	graphics
44	bit card
46	code
50	index print
52	information
54	access code
56	website
58	phone number
60	CD
62	identifier
64	print
66	identifier
70	claim card
72	ID
74	ID
80	label
90	phone number
100	camera display
102	camera
104	instructions
106	advertisement